

REMARKS

Claims 1, 16, 18, and 19 have been amended. Claims 24, 26, 27, and 33 were previously canceled. Claims 1-23, 25, 28-32, and 34-38 are pending in this application.

Claims 16-18 stand rejected under 35 U.S.C. § 102(b) as being anticipated by Tandon et al., US Patent No. 5,148,268 (Tandon). This rejection is respectfully traversed.

Tandon relates to a color image sensor array. Tandon's color pixel cell 15 has a two stage transfer circuit 20. The first stage includes transfer transistors 26a-c, each connected to a respective photodiode 14a-c. The second stage is a transfer transistor 28 that transfers an image signal from a photodiode 14a-c to an amplifier 33. The image signal from each of the photodiodes 14a-c is transferred successively through the two stages. Tandon at col. 5 lines 1-45.

As amended, claim 16 recites a method comprising, *inter alia*, "selectively enabling a group select circuit to electrically couple a charge mode read-out amplifier to a respective set of subgroup select circuits, each subgroup select circuit coupled to a plurality of pixels." Tandon does not disclose at least this limitation. Each of Tandon's transistors 26a-c, which are equated by the Examiner to the subgroup select circuits of claim 16, are connected to a single photodiode. Accordingly, withdrawal of this rejection is respectfully requested.

Claims 16-23 stand rejected under 35 U.S.C. § 102(b) as being anticipated by Decker et al., US Patent No. 6,512,546 (Decker). This rejection is respectfully traversed.

As amended, independent claim 16 recites a method comprising, *inter alia*, "when the group select circuit is enabled, enabling a pixel output signal to pass from each subgroup select circuit of the respective set of subgroup select circuits in a sequential charge mode manner through the group select circuit to the charge mode read-out amplifier." Similarly, amended claim 19 recites a method comprising, *inter alia*, "when

the series-connected group select circuit and supergroup select circuit are so enabled, enabling a pixel output signal to pass from each subgroup select circuit of the respective set of subgroup select circuits in a sequential charge mode manner through the series-connected group select circuit and supergroup select circuit to the charge mode read-out amplifier.”

Decker is silent about at least these limitations. Decker discloses that multiplexers 212 and 214 receive signals from the top and bottom column output circuits 206, 210 respectively. As shown in FIGS. 5-7 of Decker, the column output circuits include differential amplifiers 700 connected to each column readout line. Accordingly, Decker teaches that a voltage is driven through the multiplexers by the amplifiers 700. Accordingly, Decker relates to a voltage mode operation and does not teach a charge mode operation as recited by claims 16 and 19. For at least these reasons, withdrawal of this rejection is respectfully requested.

Claims 31, 32 and 34 stand rejected under 35 U.S.C. § 102(e) as being anticipated by Nair. This rejection is respectfully traversed.

As, amended independent claim 31 recites an imager device comprising, *inter alia*, “a controller for providing control signals to the column select circuits and the group select circuits to selectively enable the respective column select circuits and group select circuits to pass signals in a charge mode manner from the sensors to said readout circuit one sensor at a time.” Amended claim 34 recites an image sensor comprising, *inter alia*, “a controller for providing control signals to the image sensors to produce a readout signal and to the supergroup select circuits, group select circuits, and subgroup select circuits to selectively enable the respective supergroup, group, and subgroup select circuits to pass output signals in a charge mode manner from the image sensors to the readout circuit one sensor at a time.”

Nair is silent about at least these limitations. Nair discloses sense amp cells 116 of the sense amp array 114 each include an operational amplifier for driving a differential signal pair through the analog multiplexer 118 and into a signal processing pipe 126. Nair at col. 2, lines 59-64; FIG. 1. Accordingly, Nair relates to voltage mode operation and does not teach a charge mode operation as recited by claims 31 and 34. The voltage mode disclosed by Nair reduces RC delay to improve speed. In contrast, the charge mode operation of the present invention can enable a reduction of parasitic capacitance, thereby reducing noise. For at least these reasons, withdrawal of this rejection is respectfully requested.

Claims 1-15, 25, 28-30, and 35-39 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Nair et al., US Patent No. 6,366,320 (Nair), in view of Takahashi et al., US Patent No. 4,551,634 (Takahashi). This rejection is respectfully traversed.

As amended, independent claims 1 and 39 recite an apparatus comprising, *inter alia*, “a controller for providing control signals to the subgroup select circuits and the group select circuits to selectively enable the respective subgroup select circuits and group select circuits to pass signals in a charge mode manner from the sensors to a readout circuit one sensor at a time.” Amended independent claim 25 recites a “method of obtaining a readout of a pixel sensor array” comprising, *inter alia*, “selectively enabling a group select circuit and a subgroup select circuit to allow a signal from each sensor in said subgroup to pass sequentially and in a charge mode manner to a readout circuit electrically connected to said group select circuit.”

For at least the reasons discussed above in connection with the rejection of claims 31, 32 and 34, Nair does not disclose, teach or suggest all limitations of independent claim 34. For at least the same reasons, Nair also does not teach or suggest the above noted limitations of independent claims 1, 25 and 39.

Takahashi is cited for teaching an isolation circuit, and does not supplement the deficiencies of Nair. Therefore, even when Nair and Takahashi are considered together, they do not teach or suggest all limitations of any of amended independent claims 1, 25 and 34. For at least these reasons, withdrawal of this rejection is respectfully requested.

In view of the above amendment, applicants believe the pending application is in condition for allowance.

Dated: September 9, 2005

Respectfully submitted,

By 

Thomas J. D'Amico

Registration No.: 28,371

Elizabeth Parsons

Registration No.: 52,499

DICKSTEIN SHAPIRO MORIN &
OSHINSKY LLP

2101 L Street NW

Washington, DC 20037-1526

(202) 785-9700

Attorneys for Applicants